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Review Paper on color combination issue in various websites

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Abstract:

The web is one of the most revolutionary and global technique influencing every aspect of the people throughout the world. The web has become the most intelligible technique throughout the world which enables distribution of services through its websites. However, web's global presence and easy accessibility does not necessarily mean there are no issues related to the understanding and interpretations of its content. In designing Web pages, the color combination is very important because it has a strong impact on the impression and accessibility of the information. Color is an important factor in webpage design considerations. Choosing inappropriate color combination in website design, can have a devastating effects. These days people are working a lot on website accessibility. So in order to cater to the need of the user of each category it is highly required that we must make web sites which will be accessible to the people with different type of disabilities. As such a website should be built in such a way as is equally accessible to all the people around the world of all ages and abilities. In this paper, we review the color combination issue and its impact on the society including colorblind community.

Keywords: *Color Blindness, web, website design.*

Introduction:

The size of the web is expanding continuously like the universe after the big bang. The rapid growth of internet for commercial purpose has been noted by many researchers & practitioners & it has been almost impossible to escape its growth since its birth in 1990's.The increasing amount of web development work being carried out in these organizations means that such work should be carried out in a well-

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planned & systematic manner [1]. Over the last decade the number of Internet users has been growing exponentially and web has become an important and indispensable communication channel throughout the world. In January this year the number of Internet users was 1,093,529,692 [2]. Since web has a global presence so we cannot ignore the people who are suffering from color blindness. Color blindness also known as Color vision confusion is an abnormal condition of vision wherein the subject is incapable to differentiate between various Colors of the spectrum [3]. A person suffering from Color blindness is not blind but can see limited range of Colors. It has nothing to do with eyesight many people consider that the colorblind people are devoid of seeing all the Colors and can see any black & white Color which is not true. Color blindness is mostly neglected & most people do not consider this to be a serious issue. However, the effects of Color blindness can be severe. The problem of Color blindness has been found to be more prominent among male than in females. Of all the people suffering from Color blindness in United States (US), more than 8 % are males & between 0.4% to 2% are females [4].

Color Blindness:

Color blindness, or color vision deficiency, is the inability or decreased ability to see color, or perceive color differences, under normal lighting conditions. Color blindness affects a significant percentage of the population [5]. There is no actual blindness but there is a deficiency of color vision. The most usual cause is a fault in the development of one or more sets of retinal cones that perceive color in light and transmit that information to the optic nerve. This type of color blindness is usually a sex-linked condition. The genes that produce photo pigments are carried on the X chromosome; if some of these genes are missing or damaged, color blindness will be expressed in males with a higher probability than in females because males only have one X chromosome (in females, a functional gene on only one of the two X chromosomes is sufficient to yield the needed photo pigments) [6].

Types of Color blindness:

1. Monochromacy: which is also known as complete color blindness or total color blindness.

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2. Dichromacy: It is a moderately severe color vision defect in which one of the three color mechanisms is absent or not functioning. Dichromacy has three types:

a) Protonopia: a person with protonopia cannot make difference between red,yellow and orange in the spectrum.

b) Deuteranopia: a person with Deuteranopia cannot differentiate between red,yellow and green in the spectrum**.**

c) Tritanopia: a person with Tritanopia cannot differentiate between blue and yellow.

3. Trichromacy: It is a common type of inherited color vision deficiency occurring when one of the three cone pigments is altered in its spectral sensitivity.

a) Protonomaly: persons who suffer from protonomaly are less sensitive to red color and need excessive amount of red color in order to identify the red-green mixture than normal persons.

b) Deuteranomaly: persons who suffer from Deuteranomaly are less sensitive to green color and need excessive amount of green color in order to identify the red-green mixture.

c) Tritanomaly: This form of trichromacy is rarely found. The problem of color blindness has been found to be more prominent among males than in females. In India, the number of color blind people are 13,847,917.

Conclusion and Future Work:

In this research work we reviewed many papers on color blindness issues. These papers are good enough and have wide future scope in the field of color blindness issue. Some researchers have worked on the websites in order to check their accessibility to colorblind community using color contrast ratio given in the W3C rules. These papers provide a lot of help to the initiator for starting their work in this field. This review paper is enough for them to start their work in this field. As a future work a larger set of websites can be evaluated for permissible color combinations using color blindness tool which can help the developers to check whether their website is accessible to color blind people or not. Moreover the ultimate determinant of quality website is the user; as such future directions for this research can also involve the objective and subjective views regarding problems encountered from user’s perspective.

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